IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Frank Olschewski	Confirmation No:	1275
Application No:	10/604,276	Art Unit:	2624
Filed:	July 8, 2003	Examiner:	Kim, Chong R.
For:	Method, Arrangement, and Software for Monitoring and Controlling a Microscope		
Customer No.:	29127		
Attorney Docket No.	21295.61		

APPELLANT'S BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is the Applicants' appeal from the final Office Action, mailed August 22, 2007 (Paper No. 20070813).

A three-month extension is requested for this response.

Real Party in Interest

Leica Microsystems CMS GmbH, the assignee of the present application, is the real party in interest.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-12 are pending in this application. Claims 1-12 stand finally rejected in the outstanding Office Action. The rejection of claims 1-12 is being hereby appealed.

Status of Amendments

All amendments have been entered.

Summary of Claimed Subject Matter

Claim 1 is directed to a method for monitoring and controlling a microscope. The method comprises ascertaining the information content of at least one image (paragraph [0027]); analyzing the information content using a specified target information content and a specified variation of the information content as the tolerance dimension (paragraphs [0028]-[0030]); determining a control variable from the analysis of the information content, using a predetermined target value for influencing the information content (paragraphs [0028]-[0030]); transferring the control variable to at least one non-scanning actuator of the microscope (paragraphs [0027]-[0030]); and outputting a warning signal in the event of variations of the information content beyond the tolerance dimension (paragraph [0031]).

Claim 2 is directed to the method as defined in Claim 1, wherein depending on the result of the analysis of the information content, several different control variables and non-scanning actuators of the microscope are determined and activated (paragraphs [0027]-[0030]).

Claim 3 is directed to the method as defined in Claim 1, wherein the method for monitoring and controlling the microscope is initiated by a user (paragraphs [0028]-[0029]).

Claim 4 is directed to the method as defined in Claim 3, wherein the method is started by the user by means of a switch (paragraphs [0028]-[0029]).

Claim 5 is directed to the method as defined in Claim 1, wherein the microscope is embodied as a scanning microscope (paragraphs [0025]-[0027]).

Claim 6 is directed to an arrangement for monitoring and controlling a microscope. The arrangement comprises a detector unit for acquiring at least one image (paragraphs [0025]-[0027]), at least one input port for a control variable (paragraph [0027]), and a computer system associated with the microscope (paragraphs [0026]-[0027]). The information content of the at least one image can be ascertained using the detector unit and the computer system (paragraph [0027]). The computer system analyzes the information content using a specified target information content and a specified variation of the information content as the tolerance dimension and determines a control variable therefrom from the analysis of the information content using a predetermined target value for influencing the information content (paragraphs [0028]-[0030]). The arrangement also comprises at least one non-scanning actuator associated with the microscope. The actuator converts the control variable allocated to the actuator into a change in the information content of the image within a tolerance dimension (paragraphs [0027]-[0030]).

Claim 7 is directed to the arrangement as defined in Claim 6, wherein a means for outputting a warning signal is provided, which means makes a warning signal available to the user if the variations in the information content lie outside the tolerance dimension (paragraph [0031]).

Claim 8 is directed to the arrangement as defined in Claim 6, wherein several non-scanning actuators are associated with the microscope, each of which receives a different control variable (paragraphs [0027]-[0030]).

Claim 9 is directed to the arrangement as defined in Claim 6, wherein a switch is provided with which a user initiates the automatic monitoring of the microscope (paragraphs [0028]-[0029]).

Claim 10 is directed to the arrangement as defined in Claim 6, wherein the switch is embodied as a click button on a display associated with the computer system (paragraph [0028]).

Claim 11 is directed to the arrangement as defined in Claim 6, wherein the microscope is embodied as a scanning microscope (paragraphs [0025]-[0027]).

Claim 12 is directed to a computer-usable medium storing computer-usable program code for computer system connected to a microscope. The code carries out a method comprising: ascertaining the information content of at least one image (paragraph [0027]); analyzing the information content using a specified target information content and a specified variation of the information content as the tolerance dimension (paragraphs [0028]-[0030]); determining a control variable from the analysis of the information content, using a predetermined target value for influencing the information content (paragraphs [0028]-[0030]); transferring the control variable to at least one non-scanning actuator of the microscope (paragraphs [0027]-[0030]); and outputting a warning signal in the event of variations of the information content beyond the tolerance dimension (paragraph [0031]).

Grounds of Rejection to be Reviewed on Appeal

1. Whether Claims 1-9, 11, and 12 are patentable under 35 USC §102(b) over Elings (US Patent No. 5,077,473).

2. Whether Claim 10 is patentable under 35 USC §103(a) over Elings in view of Tsuneta (US Patent No. 6,570,156).

Argument

Rejection under 35 USC §102(b) over US Patent No. 5,077,473

Claims 1-9, 11, and 12

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.[1]

Claims 1-9, 11, and 12 are directed to a non-scanning actuator provided with a control variable obtained by image analysis.

During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. [2]

The broadest reasonable interpretation of the words "a non-scanning actuator" is an actuating device that does not actuate any scanning motion.

Elings does not describe this element of Claims 1-9, 11, and 12.

Elings describes offset generators (numeral 30) outputting an electric signal influencing only a scanner and affecting only scanning movement of the scanner. Contrary to the Examiner's assertions in the final Office Action, the description of the offset generators in Elings does not pertain to the claimed non-scanning actuator under the broadest reasonable interpretation of the Claims.

The following citations from Elings describe the offset generators and explain their function.

"It is another object of this invention to provide a drift compensation capability for STMs, and the like, wherein compensation motion is independent of the raster scan or other positioning of the tip and can be a constant motion or may vary with time." (Elings, col. 4, lines 13-17).

"FIG. 2 shows a scanning probe microscope (SPM) 10' which has been modified to practice the method of the present invention. The SPM 10' uses two position generators 28 and 30 for each axis, each of which can be independently controlled. The outputs of

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[1] *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).
[2] *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005).

these generators are summed by the adder 32 before being input to the associated scan driver 24, 26. In the case of a raster scan image, it is convenient to think of the generators 28, 30 as scan and offset, respectively, although they can be used independently for any probe positioning pattern. The scan generators 28 can be driven with the appropriate waveforms for the raster and the offset generators 30 can be driven at an independent, typically slower, rate to generate a motion of the entire raster scan area. The offset generator 28 can be driven with a waveform that is computed by the controller 18, which may be a waveform for adding constant velocity motions or a waveform that will produce a motion whose velocity varies with time. The offset can be changed continuously or at the end of each scan line. In the case of some other probe positioning operation such as step and dwell for current/voltage measurements at a particular point, the scan generator 28 can be used for the probe positioning and the offset generator 30 can be used to move the probe with an independent motion, to drift the probe such that the probe is stationary with respect to the sample, i.e. to compensate for unwanted drift." (Elings, col. 7, lines 9-38).

Fig. 2 of Elings is shown below:

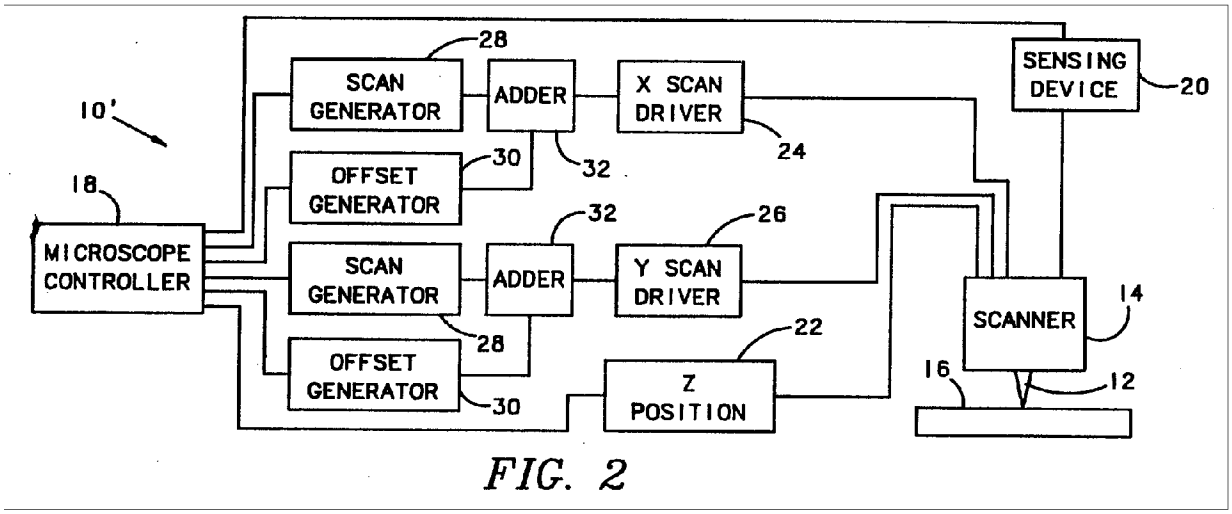

FIG. 2

The signals are generated by the offset generators 30 independently from the scan generators 28; the former are controlled independently from the latter. This, however, does not turn the offset generators into non-scanning actuators.

Fig. 2 makes it clear that the independently generated signals from the offset generators always act upon the scanner 14 (by being added to the signals produced by the scan generators 28 and being sent to the scanner 14 via the scan drivers 24 and 26). The scanning pattern received from the scan drivers by the scanner is the sum of four components, two of which come from the offset generators.

Like independent X and Y scan drivers combining to produce the scanning motion of the scanner, the scan and offset generators combine in the same manner, making the scanning motion in Elings a sum of four components: offset X, raster X, offset Y, and raster Y, all routed to the scanner via the scan drivers.

The only function of the offset generators is to influence the scanning pattern used by the scanner for the scanning, and the offset generators always perform this function. The phrase "a non-scanning actuator" cannot be reasonably interpreted broadly enough to encompass the offset generators of Elings: the only thing that the offset generators actuate (insofar as they may be called "actuators", which they are not) is a configuration of scanning pattern performed by the scanner.

The aforementioned element of Claims 1-9, 11, and 12 is not found in Elings; therefore, the 35 USC §102(b) rejection should be withdrawn, and Claims 1-9, 11, and 12 should be allowed.

Rejection under 35 USC §103(a) over US Patent No. 5,077,473 in view of US Patent No. 6,570,156.

Claim 10

Claim 10 has been rejected because, according to the final Office Action, "it would be obvious to one having ordinary skill in the art at the time of the invention to use a GUI for user interaction in Elings as taught by Tsuneta."

Claim 10 is directed to a non-scanning actuator of a microscope provided with a control variable obtained by image analysis.

As explained hereinabove, Elings does not describe this element. Therefore, using a GUI for user interaction in Elings does not lead to the claimed invention, and the Final Office action does not establish a prima facie case of obviousness; the 35 USC §103(a) rejection should be withdrawn, and Claim 10 should be allowed.

For the foregoing reasons, Applicants believe that the pending rejections should be reversed, and that the present application should be passed to allowance. Should any questions arise, please, contact the undersigned.

Respectfully submitted,

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Claims Appendix

Claim 1 (previously presented): A method for monitoring and controlling a microscope, comprising the following steps:

a) ascertaining the information content of at least one image;

b) analyzing the information content using a specified target information content and a specified variation of the information content as the tolerance dimension;

c) determining a control variable from the analysis of the information content, using a predetermined target value for influencing the information content;

d) transferring the control variable to at least one non-scanning actuator of the microscope; and

e) outputting a warning signal in the event of variations of the information content beyond the tolerance dimension.

Claim 2 (previously presented): The method as defined in Claim 1, wherein depending on the result of the analysis of the information content, several different control variables and non-scanning actuators of the microscope are determined and activated.

Claim 3 (original): The method as defined in Claim 1, wherein the method for monitoring and controlling the microscope is initiated by a user.

Claim 4 (original): The method as defined in Claim 3, wherein the method is started by the user by means of a switch.

Claim 5 (original): The method as defined in Claim 1, wherein the microscope is embodied as a scanning microscope.

Claim 6 (previously presented): An arrangement for monitoring and controlling a microscope, comprising:

a detector unit for acquiring at least one image,

at least one input port for a control variable,

a computer system associated with the microscope, wherein the information content of the at least one image can be ascertained using the detector unit and the computer system; the computer system analyzes the information content using a specified target information content and a specified variation of the information content as the tolerance dimension, and determines a control variable therefrom; from the analysis of the information content, using a predetermined target value for influencing the information content; and

at least one non-scanning actuator associated with the microscope, wherein the actuator converts the control variable allocated to the actuator into a change in the information content of the image within a tolerance dimension.

Claim 7 (original): The arrangement as defined in Claim 6, wherein a means for outputting a warning signal is provided, which means makes a warning signal available to the user if the variations in the information content lie outside the tolerance dimension.

Claim 8 (previously presented): The arrangement as defined in Claim 6, wherein several non-scanning actuators are associated with the microscope, each of which receives a different control variable.

Claim 9 (original): The arrangement as defined in Claim 6, wherein a switch is provided with which a user initiates the automatic monitoring of the microscope.

Claim 10 (original): The arrangement as defined in Claim 6, wherein the switch is embodied as a click button on a display associated with the computer system.

Claim 11 (original): The arrangement as defined in Claim 6, wherein the microscope is embodied as a scanning microscope.

Claim 12 (previously presented): A computer-usable medium storing computer-usable program code for computer system connected to a microscope carrying out a method comprising the steps:

a) ascertaining the information content of at least one image;

b) analyzing the information content using a specified target information content and a specified variation of the information content as the tolerance dimension;

c) determining a control variable from the analysis of the information content, using a predetermined target value for influencing the information content;

d) transferring the control variable to at least one non-scanning actuator of the microscope; and

e) outputting a warning signal in the event of variations of the information content beyond the tolerance dimension.

Evidence Appendix

None

Related Proceedings Appendix

None